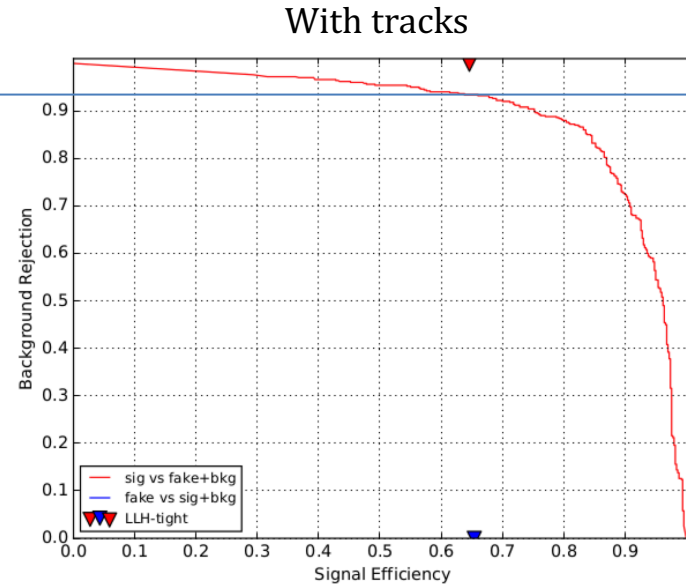
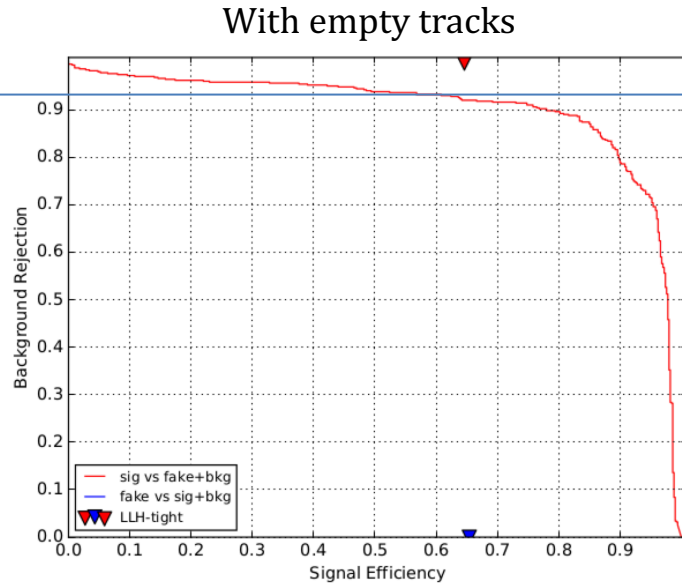


# Comparison before/after the fix

1

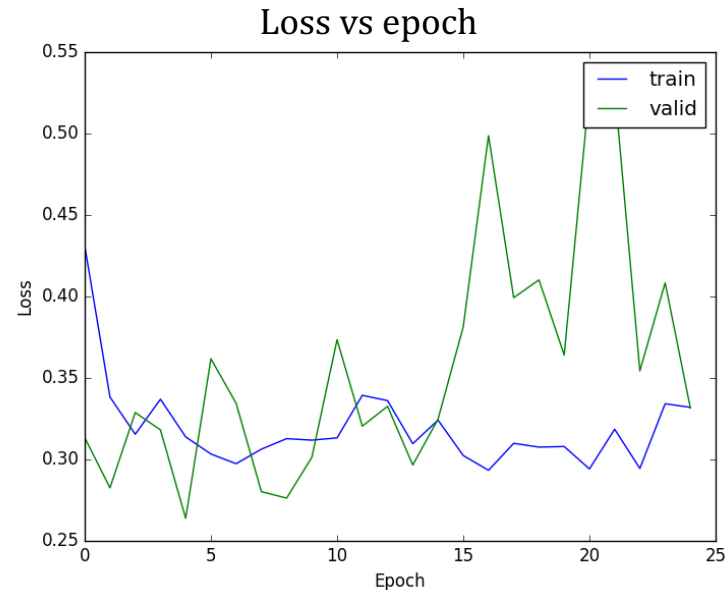
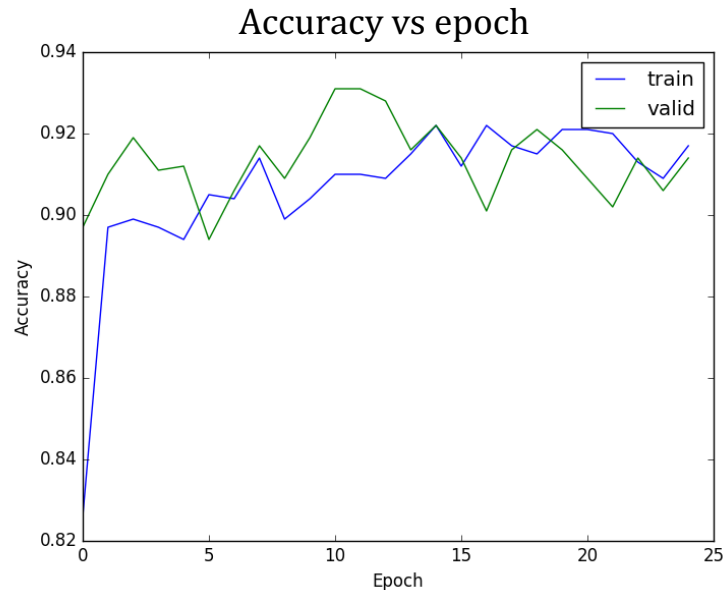


- Overall, there's no huge difference
  - high efficiency ( $> \sim 80\%$ ) region looks better on the left (without tracks)
  - while low efficiency ( $< \sim 70\%$ ) region looks better on the right (with tracks)
- Very slow training on CPUs. One sec/electron. E.g. 500 sec/epoch for a batch\_size=500



# Training monitors

2



- It looks not so nice: spiky/unstable
- Samples with increased stat under production (40k)
- Ultimately need to read the h5 files directly w/o intermediate processing



backup



# Input tracks

- Previously the tracks have been filled as empty images just filled as 0 everywhere
- Now the tracks are filled with these input variables: energy fraction (p/et), deta, dphi, d0
- d0 vs z0 can be added as an image (to be tried)
- **Make comparisons of the performance before vs after the fix (next page)**

efrac	deta	dphi	d0
[ 0.07237366	0.14760917	0.35721409	-0.28969631]
[ 0.0620301	0.2442348	0.21897829	0.03190306]
[ 0.10228193	0.37456948	0.06142437	-0.04823672]
[ 0.09827996	0.37852186	0.09403837	0.01541148]
[ 0.02752126	0.32297868	-0.02064884	-0.04067117]
[ 0.02668832	0.20117486	0.26017344	0.06518166]
[ 0.05826901	0.12410325	0.2873888	0.11428737]
[ 0.04471261	0.05371642	-0.22271013	-0.02596565]
[ 0.04795227	0.24241945	0.23052192	-0.10818805]
[ 0.17784255	0.1773088	-0.08956194	0.24996121]
[ 0.20666969	0.23425144	0.04962385	3.24470615]
[ 0.04695	0.05722004	-0.10806632	6.32446003]
[ 0.	0.	0.	0.]
[ 0.	0.	0.	0.]
[ 0.	0.	0.	0.]

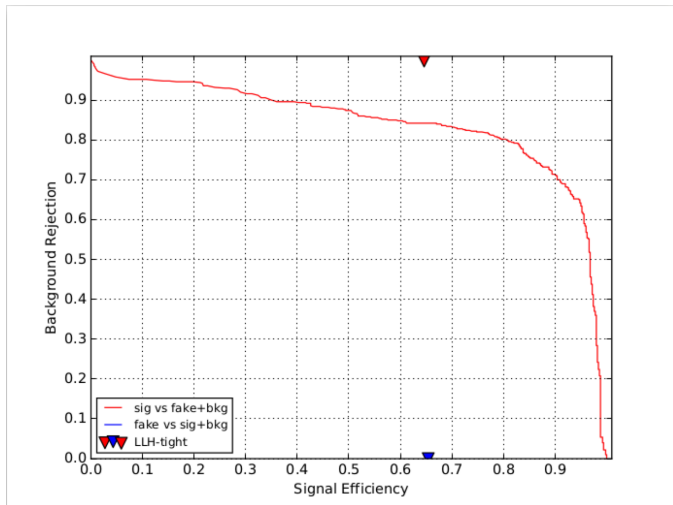
max\_tracks=15

Processed with RNN

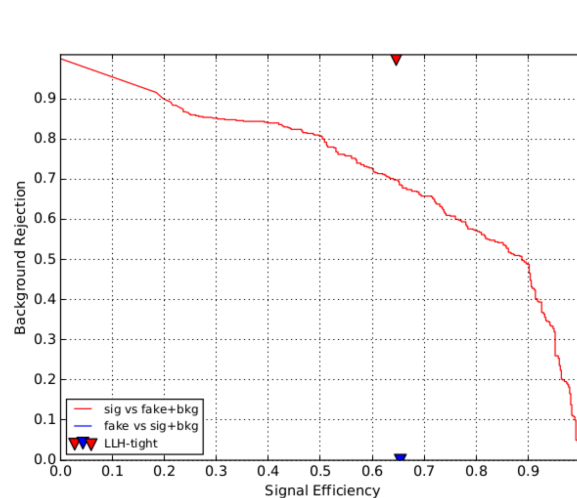


# Comparison before/after of track recovery

## Before fix



## After fix



- accuracy monitored during the training epochs increase  $\sim 0.58 \rightarrow \sim 0.69$
- roc curve looks much worse after adding the tracks.. to be investigated..
- Comments from Dominique: nChunks ( $\sim$ batch size) needs to be configured

